

(3) If a control chart approach is used to evaluate ground-water monitoring data, the specific type of control chart and its associated parameter values shall be protective of human health and the environment. The parameters shall be determined after considering the number of samples in the background data base, the data distribution, and the range of the concentration values for each constituent of concern.

(4) If a tolerance interval or a predictional interval is used to evaluate ground-water monitoring data, the levels of confidence and, for tolerance intervals, the percentage of the population that the interval must contain, shall be protective of human health and the environment. These parameters shall be determined after considering the number of samples in the background data base, the data distribution, and the range of the concentration values for each constituent of concern.

(5) The statistical method shall account for data below the limit of detection with one or more statistical procedures that are protective of human health and the environment. Any practical quantitation limit (pql) that is used in the statistical method shall be the lowest concentration level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions that are available to the facility.

(6) If necessary, the statistical method shall include procedures to control or correct for seasonal and spatial variability as well as temporal correlation in the data.

(i) The owner or operator must determine whether or not there is a statistically significant increase over background values for each parameter or constituent required in the particular ground-water monitoring program that applies to the unit, as determined under §§ 257.24(a) or 257.25(a).

(1) In determining whether a statistically significant increase has occurred, the owner or operator must compare the ground-water quality of each parameter or constituent at each monitoring well designated pursuant to § 257.22(a)(2) to the background value of that constituent, according to the sta-

tistical procedures and performance standards specified under paragraphs (g) and (h) of this section.

(2) Within a reasonable period of time after completing sampling and analysis, the owner or operator must determine whether there has been a statistically significant increase over background at each monitoring well.

§ 257.24 Detection monitoring program.

(a) Detection monitoring is required at facilities identified in § 257.5(a) at all ground-water monitoring wells defined under §§ 257.22 (a)(1) and (a)(2). At a minimum, a detection monitoring program must include the monitoring for the constituents listed in appendix I of 40 CFR part 258.

(1) The Director of an approved State may delete any of the appendix I (Appendix I of 40 CFR part 258) monitoring parameters for a unit if it can be shown that the removed constituents are not reasonably expected to be contained in or derived from the waste contained in the unit.

(2) The Director of an approved State may establish an alternative list of indicator parameters for a unit, in lieu of some or all of the constituents in appendix I to 40 CFR part 258, if the alternative parameters provide a reliable indication of releases from the unit to the ground water. In determining alternative parameters, the Director shall consider the following factors:

(i) The types, quantities, and concentrations of constituents in waste managed at the unit;

(ii) The mobility, stability, and persistence of waste constituents or their reaction products in the unsaturated zone beneath the unit;

(iii) The detectability of indicator parameters, waste constituents, and reaction products in the ground water; and

(iv) The concentration or values and coefficients of variation of monitoring parameters or constituents in the groundwater background.

(b) The monitoring frequency for all constituents listed in appendix I to 40 CFR part 258, or in the alternative list approved in accordance with paragraph (a)(2) of this section, shall be at least semiannual during the active life of

the unit plus 30 years. A minimum of four independent samples from each well (background and downgradient) must be collected and analyzed for the appendix I (Appendix I of 40 CFR part 258) constituents, or the alternative list approved in accordance with paragraph (a)(2) of this section, during the first semiannual sampling event. At least one sample from each well (background and downgradient) must be collected and analyzed during subsequent semiannual sampling events. The Director of an approved State may specify an appropriate alternative frequency for repeated sampling and analysis for appendix I (Appendix I of 40 CFR part 258) constituents, or the alternative list approved in accordance with paragraph (a)(2) of this section, during the active life plus 30 years. The alternative frequency during the active life shall be no less than annual. The alternative frequency shall be based on consideration of the following factors:

- (1) Lithology of the aquifer and unsaturated zone;
- (2) Hydraulic conductivity of the aquifer and unsaturated zone;
- (3) Ground-water flow rates;
- (4) Minimum distance between upgradient edge of the unit and downgradient monitoring well screen (minimum distance of travel); and
- (5) Resource value of the aquifer.

(c) If the owner or operator determines, pursuant to § 257.23(g), that there is a statistically significant increase over background for one or more of the constituents listed in appendix I to 40 CFR part 258, or in the alternative list approved in accordance with paragraph (a)(2) of this section, at any monitoring well at the boundary specified under § 257.22(a)(2), the owner or operator:

- (1) Must, within 14 days of this finding, place a notice in the operating record indicating which constituents have shown statistically significant changes from background levels, and notify the State Director that this notice was placed in the operating record; and
- (2) Must establish an assessment monitoring program meeting the requirements of § 257.25 within 90 days except as provided for in paragraph (c)(3) of this section.

(3) The owner/operator may demonstrate that a source other than the unit caused the contamination or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in ground-water quality. A report documenting this demonstration must be certified by a qualified ground-water scientist or approved by the Director of an approved State and be placed in the operating record. If a successful demonstration is made and documented, the owner or operator may continue detection monitoring as specified in this section. If, after 90 days, a successful demonstration is not made, the owner or operator must initiate an assessment monitoring program as required in § 257.25.

§ 257.25 Assessment monitoring program.

(a) Assessment monitoring is required whenever a statistically significant increase over background has been detected for one or more of the constituents listed in appendix I of 40 CFR part 258 or in the alternative list approved in accordance with § 257.24(a)(2).

(b) Within 90 days of triggering an assessment monitoring program, and annually thereafter, the owner or operator must sample and analyze the ground water for all constituents identified in appendix II of 40 CFR part 258. A minimum of one sample from each downgradient well must be collected and analyzed during each sampling event. For any constituent detected in the downgradient wells as the result of the complete appendix II (Appendix II of 40 CFR part 258) analysis, a minimum of four independent samples from each well (background and downgradient) must be collected and analyzed to establish background for the new constituents. The Director of an approved State may specify an appropriate subset of wells to be sampled and analyzed for appendix II (Appendix II of 40 CFR part 258) constituents during assessment monitoring. The Director of an approved State may delete any of the appendix II (Appendix II of 40 CFR part 258) monitoring parameters for a unit if it can be shown that